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PATENT



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Joseph A. Zupanick et al.

Serial No.:

10/003,917 ✓

Filing Date:

November 1, 2001

Group Art Unit:

Title:

METHOD AND SYSTEM FOR SURFACE
PRODUCTION OF GAS FROM A SUBTERRANEAN
ZONE

Box DAC

Assistant Commissioner for Patents

Washington, DC 20231

Dear Sir:

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PETITION TO MAKE SPECIAL - ACCELERATED EXAMINATION

Applicant hereby submits this Petition to have this Application granted special status pursuant to M.P.E.P. § 708.02, Subpart VIII.

A. Single Invention Requirement

Should the U.S. Patent and Trademark Office determine that all of the claims presented are not obviously directed to a single invention, Applicants will make an election without traverse as a prerequisite to the grant of special status.

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B. Applicant Has Caused A Pre-Examination Search To Be Made

Applicant, through its attorneys, has caused a pre-examination search to be made. The search was conducted by the professional search firm, PatPro of Arlington, Virginia. The search included Class 166, Subclasses 50, 268, and 272.7; Class 175, Subclass 61; and Class 299, Subclasses 4 and 8. Foreign patents and literature were also searched. Primary Examiner George Suchfield of Group 3600 was consulted by the searcher. The following references were uncovered by this search:

U.S. Patent No.	Inventor	Title
4,221,433	Jacoby	Retrogressively In-situ Ore Body Chemical Mining System and Method
4,317,492	Summers et al.	Method and Apparatus for Drilling Horizontal Holes in Geological Structures from a Vertical Bore
4,390,067	Willman	Method of Treating Reservoirs Containing Very Viscous Crude Oil or Bitumen
4,397,360	Schmidt	Method for Forming Drain Holes from a Cased Well
4,512,422	Knisley	Apparatus for Drilling Oil and Gas Wells and a Torque Arrestor Associated Therewith
4,527,639	Dickinson, III, et al.	Hydraulic Piston-Effect Method and Apparatus for Forming a Bore Hole
4,763,734	Dickinson, et al.	Earth Drilling Method and Apparatus Using Multiple Hydraulic Forces
5,199,496	Redus, et al.	Subsea Pumping Device Incorporating a Wellhead Aspirator
4,852,666	Brunet, et al.	Apparatus for and Method of Drilling Offset Wells for Producing Hydrocarbons
5,197,783	Theimer, et al.	Extendable/Erectable Arm Assembly and Method of Borehole Mining
5,301,760	Graham	Completing Horizontal Drain Holes from a Vertical Well
5,402,851	Baiton	Horizontal Drilling Method for Hydrocarbon Recovery
5,584,605	Beard, et al.	Enhanced In Situ Hydrocarbon Removal from Soil and Groundwater
5,615,739	Dallas	Apparatus and Method for Completing and ReCompleting Wells for Production

U.S. Patent No.	Inventor	Title
5,690,390	Bithell	Process for Solution Mining Underground Evaporite Ore Formations such as Trona
5,720,356	Gardes	Method and System for Drilling Underbalanced Radial Wells Utilizing a Dual String Technique in a Live Well
5,785,133	Murray, et al.	Multiple Lateral Hydrocarbon Recovery System and Method
5,868,202	Hsu	Hydrologic Cells for Recovery of Hydrocarbons or Thermal Energy from Coal, Oil-shale, Tar-Sands and Oil-Bearing Formations
5,934,390	Uthe	Horizontal Drilling for Oil Recovery

C. Detailed Discussion of the References

U.S. Patent No. 4,221,433, issued to *Jacoby*, discloses a retrogressively in-situ ore body chemical mining system and method. The patent discloses that the method and system makes it practicable to mine an ore body of substantially horizontally extended configuration which would otherwise be uneconomical because of adverse overhead or overburden conditions. The patent discloses that beginning adjacent the distal ends of two or more generally horizontally drilled and substantially parallel bore holes which are drilled into the ore body from an elevation substantially similar to that of the ore body, a combination of permeabilizing and mining processes are applied to the body of ore circumjacent the horizontal penetration. The patent further discloses that the permeabilizing and mining processes are retrogressively applied to successive blocks of the ore body retreating by stages from the distal region of the penetration towards the entry region thereof.

U.S. Patent No. 4,317,492, issued to *Summers, et al.*, discloses a method and apparatus for drilling horizontal holes in geological structures from a vertical bore. The patent discloses that the geological structures intended to be penetrated in this fashion are coal seams, as for in situ gasification or methane drainage, or in oil-bearing strata for increasing the flow rate from a pre-existing well. The patent also discloses that other possible uses for the device might be for use in the leaching of uranium ore from underground deposits or for introducing horizontal channels for water and steam injections. The patent also discloses that the invention provides an improved drilling technique utilizing a drill stem having a high pressure water jet drilling nozzle and a plurality of interlinked, articulated

boxes which are hinged together on one side so as to allow right angle turning motion within a very small radius. In addition, the patent discloses that detent or interlocking means can also be employed between the individual boxes so as to maintain them in a linear array, once they have traversed the right angle corner for horizontal drilling.

U.S. Patent No. 4,390,067, issued to *Willman*, discloses a method of treating reservoirs containing very viscous crude oil or bitumen. The patent discloses that the steps central to the process are drilling a horizontal well within the oil-bearing stratum, and heating the oil in the vicinity of the horizontal well to produce a hot liquid corridor. The patent also discloses that the open borehole is filled and the oil in the heated corridor is displaced from one end to the other. The patent also discloses that the corridors may be connected in various configurations to effectively displace a high percentage of oil in a particular field.

U.S. Patent No. 4,397,360, issued to *Schmidt*, discloses a method for forming drain holes from a cased well. The patent discloses that a casing anchor is set in the casing adjacent the formation and a whipstock is used to mill a window in the casing. The patent discloses that a flexible drill string is then used to drill the horizontal drain hole through the window. The patent also discloses that in one modification, a deflection tool having a deflection surface which has a radius of curvature between 11 and 28 feet is used for both the milling and drilling operations. The patent also discloses that in another modification, the milling operation is carried out with a sidetracking whipstock which is then replaced with the above-described deflection tool to carry out the drilling operation. The patent also discloses that in another modification, a whipstock adapter is positioned onto a sidetracking whipstock after the milling operation to convert the sidetracking whipstock into a deflecting tool having the desired radius of curvature for carrying out the drilling operation.

U.S. Patent No. 4,512,422, issued to *Knisley*, discloses an apparatus for drilling oil and gas wells and a torque arrestor associated therewith. The patent discloses that an apparatus for drilling oil and gas wells includes an articulated drilling assembly having a bit which is powered by an air motor pressurized by air or gas delivered from the surface of the earth via a coiled tube. The patent also discloses that a torque arrestor is used to keep the drilling assembly from rotating with the bit. The patent also discloses that the apparatus is suitable for drilling horizontally within the earth as well as vertically.

U.S. Patent No. 4,527,639, issued to *Dickinson, III, et al.*, discloses a hydraulic piston-effect method and apparatus for forming a bore hole. The patent discloses a system for the formation of a bore hole, particularly for use in enhancing the recovery of oil from an oil bearing underground formation using an assembly including a piston sliding in a guide tube. The patent discloses that the forward end of the piston body terminates in a drillhead including multiple ports for passing drilling fluid into the formation. The patent discloses that pressurized fluid flowing through the piston body applies pressure against the drillhead to cause it to move into the formation at the same time as it is cutting a pathway for itself. The patent also discloses that in a preferred embodiment, the forward end of the guide tube includes a whipstock through which the piston body turns from a vertical to a horizontal direction into the formation to provide a radial for the injection of steam. The patent also discloses that a rigid metal piston body may be used which plastically deforms when passing through the whipstock and becomes rigid thereafter as it moves through the formation.

U.S. Patent No. 4,763,734, issued to *Dickinson, et al.*, discloses an earth drilling method and apparatus using multiple hydraulic forces. The patent discloses a system for the formation of a bore hole, particularly for use in enhancing the recovery of oil from an oil bearing underground formation using an assembly including a driving fluid chamber, sealed from a drilling fluid chamber, and a drill string terminating in a hydraulic drillhead which passes drilling fluid into the formation. The patent discloses that pressurized fluid from the drilling fluid chamber is applied against the drillhead to pull the drill string into the formation, while pressurized fluid from the driving fluid chamber pushes the drill string forward from the rear. The patent also discloses that in a preferred embodiment, the forward end of the guide tube includes a whipstock through which the piston body turns from a vertical to a horizontal direction into the formation to provide a radial for the injection of steam.

U.S. Patent No. 5,199,496, issued to *Redus, et al.*, discloses a subsea pumping device incorporating a wellhead aspirator. The patent discloses that a system is disclosed for subsea transportation of a hydrocarbon production stream utilizing a wellhead aspirator to reduce wellhead flowing pressure. The patent discloses that by using the Bernoulli effect, a head is delivered to the flowing stream that enables the crude oil/water/gas fluid within the system to be moved farther distances than wellhead pressure alone would allow. The patent also

discloses that a lift gas is injected subsea into the fluid flow in a riser at the production facility. The patent discloses that this lift gas both reduces the specific gravity of the flowing oil and gas and assists the fluids in moving upward along a riser to the production facility.

U.S. Patent No. 4,852,666, issued to *Brunet, et al.*, discloses an apparatus for and a method of drilling offset wells for producing hydrocarbons. The patent discloses that a directional guidance device, for deflecting a drill bit away from the longitudinal axis of a substantially horizontal section of a well bore, takes advantage of gravitational force to move a deflector member therein between first and second positions. The patent discloses that in the first position, the deflector member prevents the drill bit from advancing past the directional guidance device. The patent discloses that in the second position, the deflector member allows the bit to pass out of the guidance device, and deflects the bit away from the longitudinal axis of the horizontal section of the well bore.

U.S. Patent No. 5,197,783, issued to *Theimer, et al.*, discloses an extendable/erectable arm assembly and method of borehole mining. The patent discloses that an extendable, retractable, erectable arm assembly for housing and supporting a water conduit extending outward from a tool located in a borehole to a nozzle to produce a high pressure water cutting jet is provided. The patent discloses that the arm assembly includes a plurality of interlocking arm segments for housing, supporting, and moving the conduit through an angle of about 90 degrees from a stowed position to an operating position. The patent discloses that the arm segments include integral, separable hinges capable of being interlocked such that pivotable movement is possible along any side thereof. The patent discloses that these segments have mating apertures therethrough to accommodate the conduit. The patent discloses that the assembly also includes an erecting device which provides compression on the segments and which gives the arm rigidity during movements. The patent also discloses that an alignment device is included which keeps the segments aligned when the arm is deflected. The patent discloses that there is also a device which applies tension to the erecting device, thus allowing the nozzle to remain in close proximity to a surface at which the cutting jet is directed. The patent also discloses that the assembly has a launching device designed to turn and lift the arm so that it may be extended and retracted at any angle and position. The patent discloses that there is also a device which moves the arm within the tool along the longitudinal axis of the hole. The patent discloses that the aforementioned

assembly may be incorporated into borehole mining apparatuses and used in borehole mining processes.

U.S. Patent No. 5,301,760, issued to *Graham*, discloses completing horizontal drain holes from a vertical well. The patent discloses that a horizontal bore hole is sidetracked through a window cut in a cased vertical well or from a vertical open hole shaft extending below the kickoff point. The patent discloses that in one embodiment, a whipstock is used. The patent discloses that in another embodiment, the cased vertical well provides a drillable joint so the window can be cut with a conventional bent housing mud motor from a cement plug located adjacent the drillable joint at the kickoff point. The patent also discloses that in another embodiment, a cement plug is dressed down to the kickoff point in a vertical open hole and is used to start the curved well bore. The patent discloses that after drilling at least the curved bore hole, a production string extending into the vertical well is cemented in the curved bore hole and then cut off inside the vertical cased hole with a conventional burning shoe/wash pipe assembly. The patent discloses that the whipstock or cement plug is removed to clear the vertical well to a location below the entry of the horizontal well bore. The patent also discloses that multiple horizontal wells may be drilled and that any open hole portions of the vertical well are cased with a liner. The patent discloses that a downhole pump may be provided in the vertical well below the entry of the horizontal well bore. The patent also discloses that in addition to one or more horizontal completions, one or more productive intervals can be perforated through the vertical well to provide vertical completions.

U.S. Patent No. 5,402,851, issued to *Baiton*, discloses a horizontal drilling method for hydrocarbon recovery. The patent discloses a method for recovering fluids such as crude oil, associated solution gas, formation water, injected water, natural gas and other gases, and natural gas liquids, from a hydrocarbon producing reservoir or formation in which fluids collected in one or more substantially horizontal wells are routed to the surface through a substantially vertical well bore. The patent also discloses that the method may be employed in connection with entirely new well systems, by drilling a vertical well bore to intersect or penetrate the producing formation in close proximity to one or more existing horizontal wells, or by drilling one or more horizontal wells to intersect or terminate in close proximity of an existing vertical well bore. The patent also discloses that preferably, the vertical well bore

extends to a depth greater than the depth of intersection with the horizontal well or wells, forming a sump for the collection of fluids.

U.S. Patent No. 5,584,605, issued to *Beard, et al.*, discloses enhanced in situ hydrocarbon removal from soil and groundwater. The patent discloses that the invention encompasses a process and equipment for an aggressive approach to remediation of specific hydrocarbon contaminated soil and groundwater using horizontal sparging pipes in or below the contamination with a matrix of vertical pipes that act to conduct sparger gas with associated hydrocarbons to the surface for hydrocarbon removal before recycle. The patent discloses that the matrix also acts to collect and strip hydrocarbons washed horizontally into the collector pipes by injection of a washing fluid through a matrix of vertical wash pipes spaced between the collector pipes.

U.S. Patent No. 5,615,739, issued to *Dallas*, discloses an apparatus and method for completing and recompleting wells for production. The patent discloses that the apparatus and method are particularly adapted to the completion of oil or gas wells having plurality of production zones. The patent discloses that in particular, the apparatus is useful for oil or gas wells having production zones which require stimulation prior to initial production of the well, or producing wells which require recompletion in order to open new zones or to reperforate and stimulate existing zones from which production has slowed down or ceased. The patent also discloses that the apparatus comprises a header spool having a pressure rating that is about as high as the burst pressure rating of the surface casing of the well. The patent discloses that the header spool is mounted to a casing spool before a wellhead is placed on the well. The patent discloses that the header spool has an internal passage which is at least as large of the diameter of the casing in the well. The patent discloses that this permits an efficient completion of the well after the casing is cemented in. The patent also discloses that the apparatus permits the unobstructed use of a full range of tools including casing perforation tools, blowout preventers, casing plugs, logging tools, fishing tools, and other apparatus required in the completion of a well for production. The patent discloses that the method for completing wells involves installing a header spool on the well before a wellhead is installed and performing the steps required to perforate the casing and stimulate or fracture the zones requiring treatment in order to prepare the well for production before wellhead equipment is installed. The patent also discloses that this method and apparatus permits a

well to be completed at a significantly less cost than for completing a multi-zone well in the traditional manner of completing after the wellhead equipment is installed.

U.S. Patent No. 5,690,390, issued to *Bithell*, discloses a process for solution mining underground evaporite ore formations such as trona. The patent discloses a process for solution mining isolated, mechanically mined-out areas of soluble evaporite ore to recover remaining ore reserves, wherein the mined-out areas are separated from an operational mine area by barrier pillars of the evaporite ore, by drilling at least one vertical well bore from the surface to a predefined distance above the evaporite ore body, converting the drilling of the vertical well bore to a substantially horizontal well bore at a predetermined distance below the ground level, continuing the drilling parallel to and within the evaporite ore body to form a well bore, one end of which is connected to the mined-out area, developing a connection from the operating mine area to the other end of the well bore, drilling an injection from the surface into the mined-out area, injecting an aqueous solvent into the injection well, passing the solvent into the mined-out area, removing solvent enriched in dissolved evaporite ore from the mined-out area, passing such enriched solvent from the mined-out area into the well bore connecting the mined-out area and the operational mine area, removing enriched solvent from the well bore end connected to the operational mine area, and recovering the enriched solvent.

U.S. Patent No. 5,720,356, issued to *Gardes*, discloses a method and system for drilling underbalanced radial wells utilizing a dual string technique in a live well. The patent discloses a method and system of drilling multiple radial wells using underbalanced drilling, by first drilling a principle well bore. The patent discloses that there would then be provided a first carrier string having a deflection member on its lowermost end to a certain depth within the principle well bore. The patent discloses that there is then lowered a second drill string, such as coiled tubing, down the bore of the carrier string, so that the drill bit on the end of the second string is deflected by the deflection member in a predetermined direction from the principle well bore. The patent discloses that a second fluid is then pumped into an annular space between the coiled tubing and the carrier string to a position that commingles with the first fluid. The patent discloses that the commingled fluids and any hydrocarbons are then returned upward to the rig through the annular space between the borehole and the carrier string. The patent also discloses that there is then provided a volume of fluid to

establish an equilibrium within the carrier string. The patent discloses that the drill bit at the end of the coil tubing is retrieved from the bore hole and the direction of the deflection member is reoriented to second depth within the bore hole. The patent discloses that finally, the coil tubing and drill bit is lowered to the second depth to drill a second radial well, while the well is alive and producing.

U.S. Patent No. 5,785,133, issued to *Murray, et al.*, discloses a multiple lateral hydrocarbon recovery system and method. The patent discloses that an assembly for drilling multiple laterals from a borehole and into a formation includes a whipstock assembly having a radially movable lug. The patent discloses that an elongate tubular secured within the borehole has one or more non-ferrous portions and a ferrous portion adjacent and below a respective non-ferrous portion. The patent also discloses that a locator is fixed within each ferrous portion at a desired axial spacing relative to the nonferrous portion. The patent discloses that according to the method of the invention, the whipstock assembly is lowered below the locator and pulled upwardly to rotate the whipstock assembly to a selected azimuth within the tubular. The patent discloses that the lug on whipstock assembly fits within the locator to axially position the whipstock face within the non-ferrous portion of the tubular. The patent also discloses that a drill bit engages the whipstock face and drills a window through the non-ferrous portion of the tubular and then into the formation.

U.S. Patent No. 5,868,202, issued to *Hsu*, discloses hydrologic cells for recovery of hydrocarbons or thermal energy from coal, oil-shale, tar-sands, and oil-bearing formations. The patent discloses a system for recovery of hydrocarbons or thermal energy from host-rock formations bearing coal, oil-shale, tar-sands, or oil by use of a hydrologic cell which conveys a reacting fluid under pressure to a source-aquifer, thereafter extracting thermal energy or hydrocarbons from said host-rock, moving said hydrocarbons or thermal energy to said sink-aquifer, and then removing the hydrocarbons or thermal energy to the surface for ultimate use.

U.S. Patent No. 5,934,390, issued to *Uthe*, discloses horizontal drilling for oil recovery. The patent discloses a method of drilling in a stratum and a method of enhancing recovery of a hydrocarbon material from an existing well. The patent discloses that the method of drilling generally includes providing a drilling apparatus having at least one laterally oriented nozzle. The patent discloses that part of the drilling apparatus is moved

downwardly along an existing bore without drilling until the nozzle is in position and the pressurized hydraulic fluid is delivered through the nozzle to define a first generally horizontally oriented secondary bore. The patent discloses that the nozzle is reoriented and is used to bore a second generally horizontally oriented secondary bore. The patent also discloses that the method of enhancing recovery may employ a similar process to define a first generally horizontally oriented secondary bore. The patent discloses that the drilling apparatus is removed and pressurized hydraulic fluid is delivered into the main bore and the secondary bore to fracture the stratum to assist in extracting the hydrocarbon material from the well.

D. The Pending Claims Define Over the Cited References

Applicant's claimed methods and systems for production of gas are neither disclosed nor anticipated by any of the aforementioned references. None of the references disclose lowering the water pressure throughout a coverage area of a drainage pattern in a subterranean zone by producing water through cooperating bores of the drainage pattern. Furthermore, none of the references disclose producing gas from the coverage area with at least some of the water. Moreover, none of the references discloses simultaneously producing water and formation gas from a gas bearing formation. Applicant respectfully submits that the invention claimed in the above-identified application clearly defines over and is distinguishable over the prior art known to Applicant and disclosed herein.

Conclusion

By this Petition to Make Special, Applicant respectfully requests that the above-identified Application be granted special status pursuant to M.P.E.P. § 708.02, Subpart VIII. Enclosed is a check in the amount of **\$130.00** to cover the filing fee specified in 37 C.F.R. § 1.17(i). The Commissioner is hereby authorized to charge any fees or credit any overpayments to Deposit Account No. 02-0384 of Baker Botts L.L.P. Early and favorable acceptance of this Petition and Application is respectfully requested.

Respectfully submitted,

BAKER BOTTS L.L.P.
Attorneys for Applicant

A handwritten signature in black ink, appearing to read 'B. W. Oaks', is written over the printed name.

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Date: 12/19/01